

2017 Tulsa District and National USACE HAB Efforts Update

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Topeka, KS
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US Army Corps of Engineers
BUILDING STRONG.



U.S. Army Corps of Engineers

Mission: Provide vital public engineering services in peace and war to strengthen our Nation's security, energize the economy, and reduce risks from disasters.



- 9 Divisions
 - Support to over 100 countries
- 43 Districts across the U.S., Europe, and Asia

USACE Recreation Stats (FY13)

from Value to the Nation: <http://www.corpsresults.us/watersupply/wsfastfacts.cfm>

- 420 lakes in 43 states
 - hosting 33% of all fresh water fishing
 - 4,628 recreation areas
 - 80% within 50 miles of a large U.S. city
- 7,829,605 acres of land and 5,630,584 acres of water under USACE management (~ 2% of all federal lands)
 - Hosting 20% of visits on federal lands
 - 56,000 miles of shoreline; 90,773 campsites; 2,022 playground sites; 959 designated swimming areas; 9,504 miles of hiking trail; 3,671 boat ramps; 110,735 marina slips
- 335,293,332 total visits (person-trips) in FY 2012
- 9,779,584 acre-feet of water supply
 - 9,359,419 currently under contract (95.7%)
 - 7,907.53 mgd yield currently under contract



Tulsa District

USACE HAB IMPACTS

Tulsa District 2017 HAB Events

- District Monitoring effort when reported in 2017
- Reports from public in Jun and Jul 2017
 - Eufaula Lake, OK
 - Fort Gibson Lake, OK
 - Pat Mayes Lake, TX
 - Heyburn Lake, OK
 - Tenkiller Lake, OK
 - Waurika Lake, OK
 - Keystone Lake, OK
- HAB Events characterized by cyanobacteria cell densities greater than 100,000 cells/ml
- Microcystin <0.05 ug/l – 1.48 ug/l

Partnership Monitoring Efforts

- Year round monitoring at Wister Lake, Ok (PVIA-SWT)
 - Monitoring March – December
 - Microcystin 0.08 ug/l (Aug) – 0.44 ug/l (Jul)
 - Spring, Fall Winter Microcystin 0.08 ug/l – 0.15 ug/l
 - Microcystin is now detected year round owing to decreased ELISA quantitation limit from 0.15 ug/l to 0.05 ug/l
- HAB event duration monitoring at Marion Reservoir, KS (KDHE-SWT)
 - Monitoring June - August

Regional and National

USACE HAB IMPACTS

Overview of USACE HAB History

- 2004 - First HABs reported by USACE managed projects (NWO)
- 2009 ERDC/TN ANSRP09-1, The Impact of HABs on USACE Operations
- 2014 USACE HAB workshop 28-29 MAY 2014 in NWP
 - Updated questionnaire was developed to update the information presented in the 2009 TN
 - 14 Districts responded, 13 respondents experience HABs
 - Recreation and Wildlife Management most commonly impacted mission areas
 - HABs impacts include lake closures, beach closures, increased workload, pet deaths
- 2017 Communication on HAB issues within USACE has improved; POCs identified; short data calls and personal communication
 - Upward reporting through ISLT
 - Broader USACE communication and action strategy needed
 - DLL will be developed

USACE Districts Reporting HABs

2004



2007



2009



2014



2016



2017



Green: Districts reporting HABs **Gray:** Districts reporting in, but NO HABs
White: No district report

Interagency Coordination

- In 1998, Congress recognized the severity of threats from harmful algal blooms (HABs) and hypoxic events and authorized the Harmful Algal Bloom and Hypoxia Research and Control Act (HABHRCA). The HABHRCA amendments Act of 2004 and 2014 reaffirmed and expanded the mandate for NOAA to advance the scientific understanding and ability to detect, monitor, assess, and predict HAB and hypoxia events.

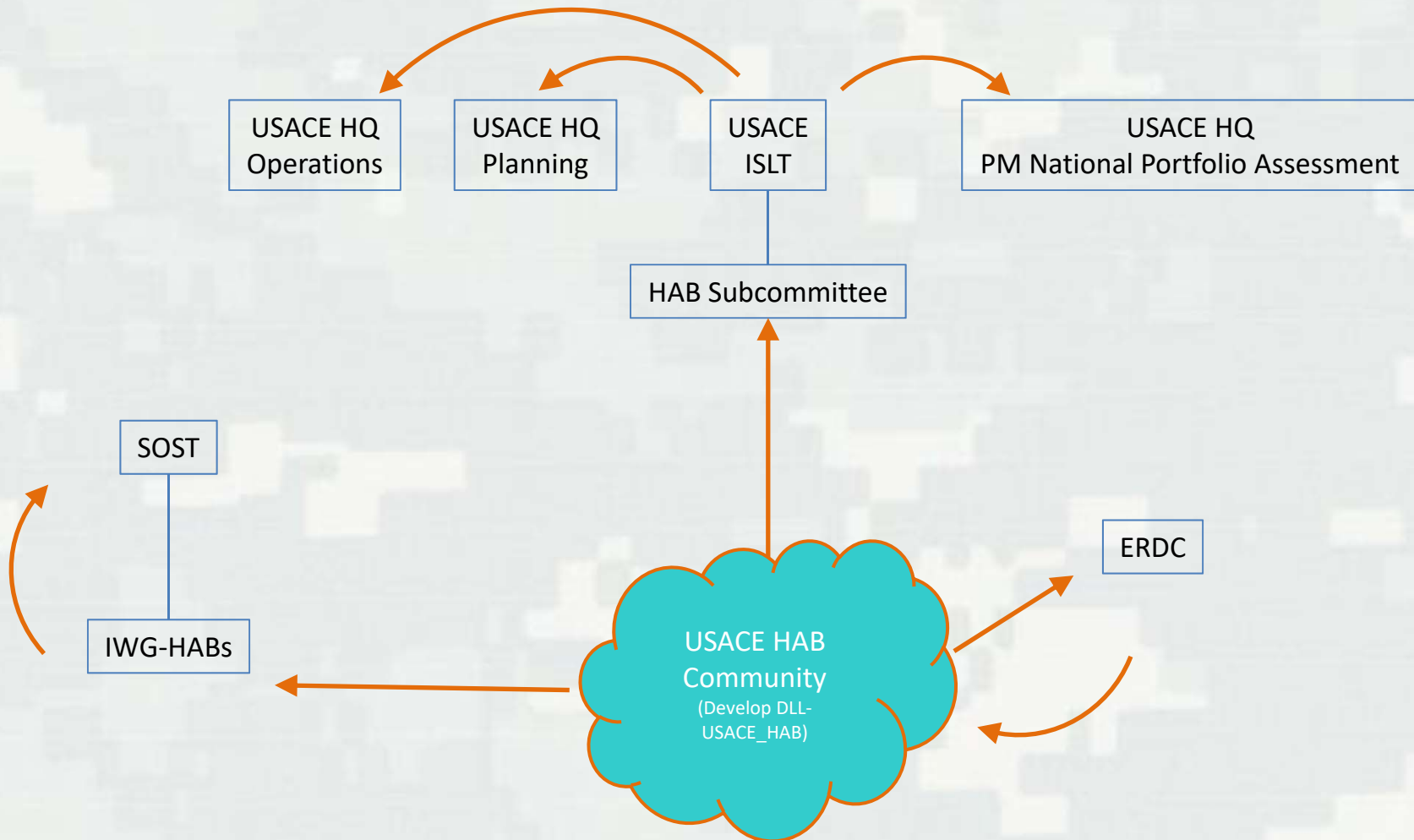
Interagency Working Group

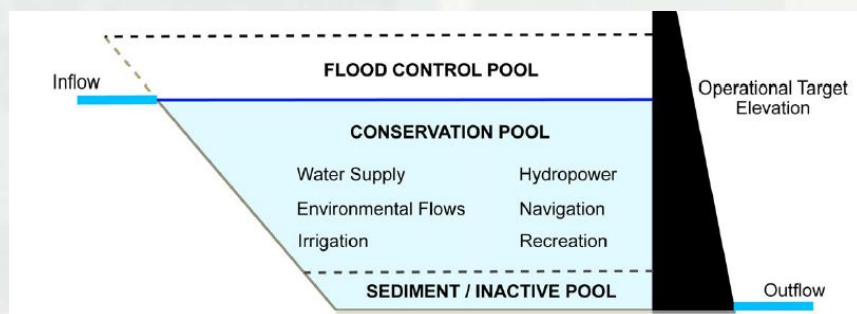
- The Interagency Working Group (IWG) on HABHRCA is tasked with coordinating and convening Federal agencies and their stakeholders to discuss HAB and hypoxia events in the United States, and to develop action plans and assessments of these situations. NOAA co-chairs the IWG-HABHRCA with EPA. Other member agencies include: USGS, USDA, Navy, NIEHS, NSF, FDA, NPS, CDC, NASA, **USACE**, BOEM.
 - 4 subgroups
 - Harmful Algal Blooms
 - Hypoxia
 - Great Lakes
 - Engagement
 - Recommendation Implementation

HABHRCA 2014 requires the development of several reports:

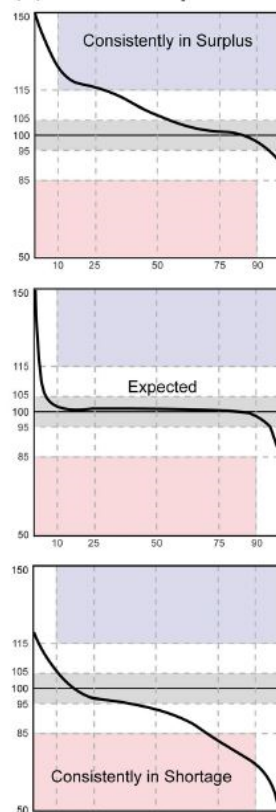
- HAB and Hypoxia Comprehensive Research Plan and Action Strategy ✓
- Report on Implementation of the HAB and Hypoxia Action Strategy
- Great Lakes Hypoxia and HAB Integrated Assessment (Incorporated into the Research Plan and Action Strategy) ✓
- Great Lakes HAB and Hypoxia Plan ✓
- Progress Report on Northern Gulf of Mexico Hypoxia
 - Mississippi River/Gulf of Mexico Watershed Nutrient Task Force 2015 Report to Congress

USACE HAB Framework

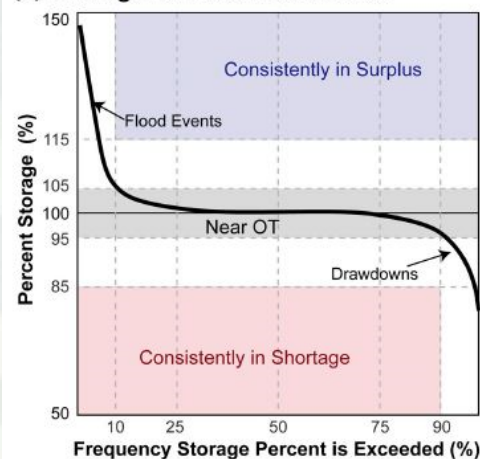




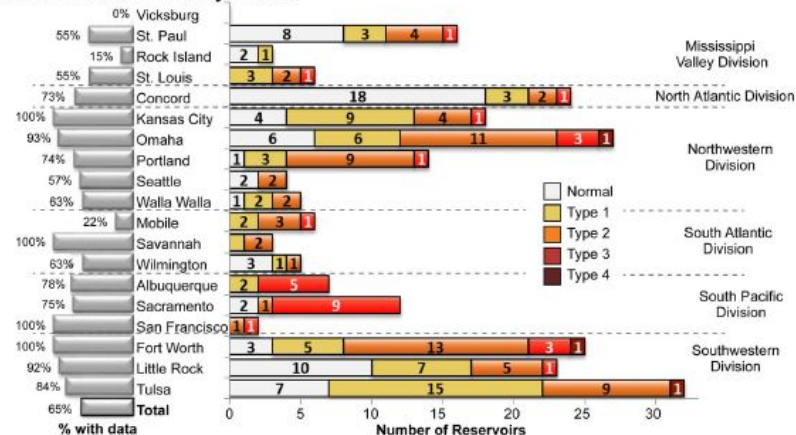
(b) SDC Examples



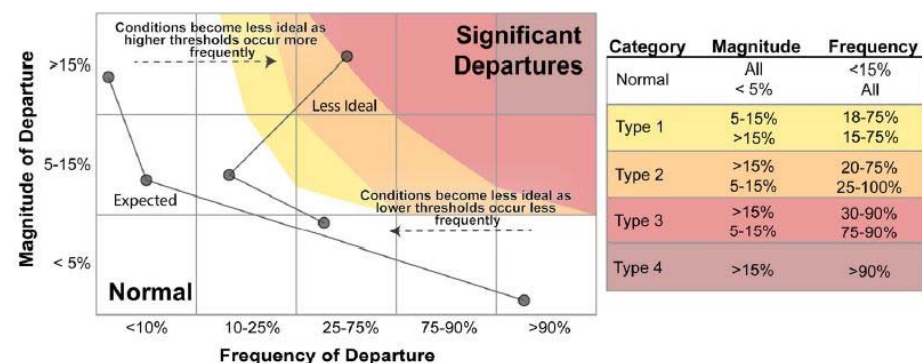
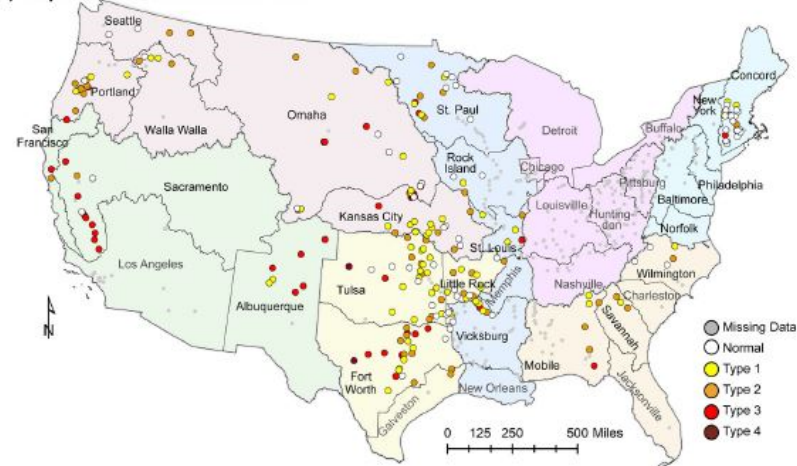
(a) Storage Duration Curve Plot



(a) Reservoir Matrix Scores by District

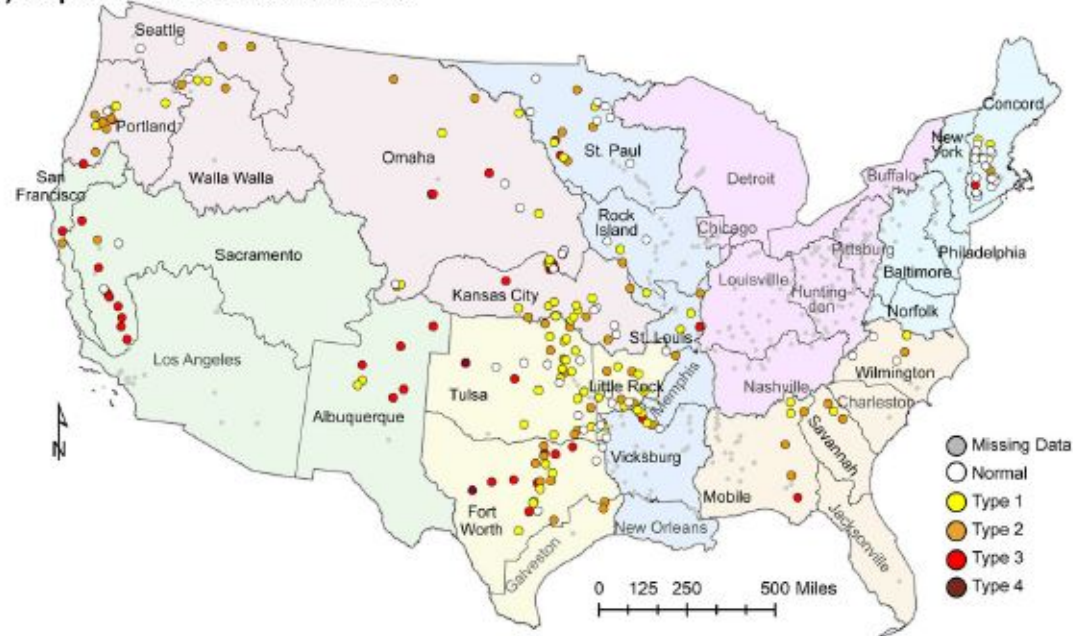


(b) Map of Reservoir Matrix Scores



Patterson, Lauren A. and Martin W. Doyle, 2018. A Nationwide Analysis of U.S. Army Corps of Engineers Reservoir Performance in Meeting Operational Targets. Journal of the American Water Resources Association (JAWRA) 1–22. <https://doi.org/10.1111/1752-1688.12622>

(b) Map of Reservoir Matrix Scores



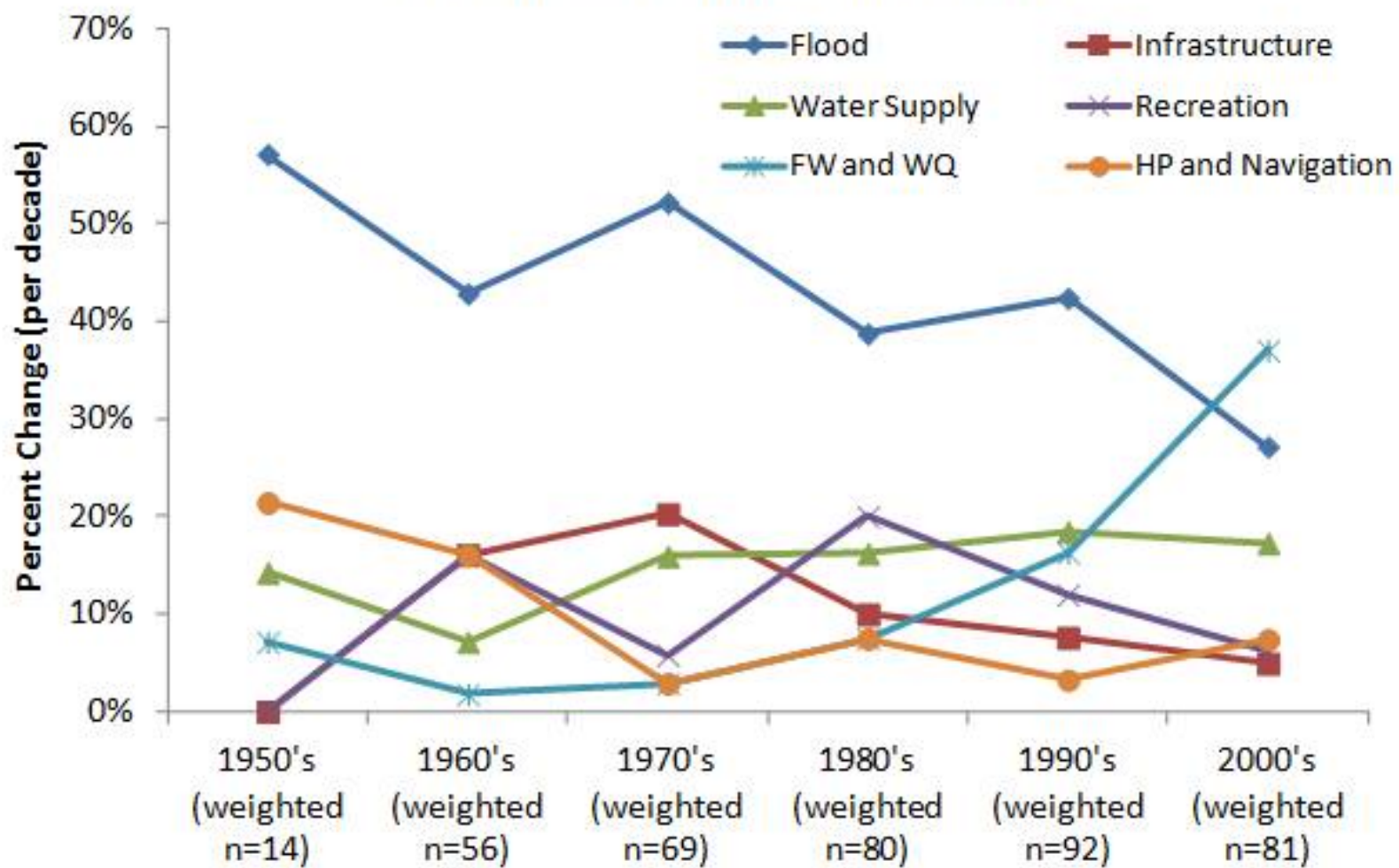
2016



2017



Operational changes in WCM



Questions?

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